

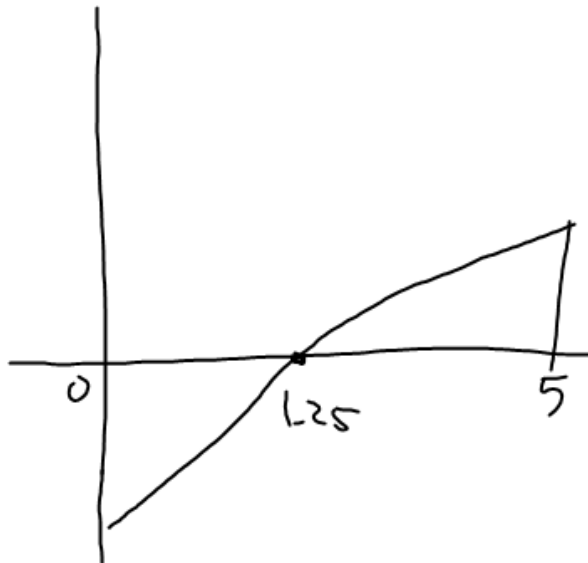
① If $\frac{ds}{dt} = t^2 - \frac{8}{(t+1)^2}$ for a particle moving along

the s -axis for $0 \leq t \leq 5$ and $s(0) = 9$ then

(a) What is the particle's position at $t = 1$ sec? $t = 5$ sec?

(b) What is the total distance traveled by the particle in the first 5 seconds?

— look at velocity graph for zero



evaluate integral
 $\left| 0 \rightarrow 1.25 \right| + \left| 1.25 \rightarrow 5 \right|$
 $\approx 3.75 \quad 38.8$

≈ 42.6 units

$$\frac{ds}{dt} = t^2 - \frac{8}{(t+1)^2} = \text{velocity}$$

$$\int t^2 dt - 8 \int (t+1)^{-2} dt \Rightarrow \frac{t^3}{3} + \frac{8}{t+1} + C \quad \text{pt. } (0, 9)$$

$$s = \frac{t^3}{3} + \frac{8}{t+1} + C$$

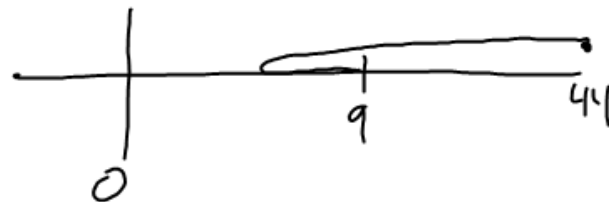
$$d(t) = \frac{t^3}{3} + \frac{8}{t+1} + 1$$

$$9 = 8 + C$$

$$C = 1$$

$$d(1) = 5\frac{1}{3} \text{ units to the rt.}$$

$$d(5) = 44 \text{ units}$$



A car moving with an initial velocity of 5 mph accelerates at a rate of $a(t) = 2.4t$ mph per second for 8 seconds.

- (a) How fast is the car going at the end of 8 sec.?
- (b) How far did the car travel during these 8 seconds?